Should we inform or engage about radon?

From health behavior theories to practices in stakeholder engagement

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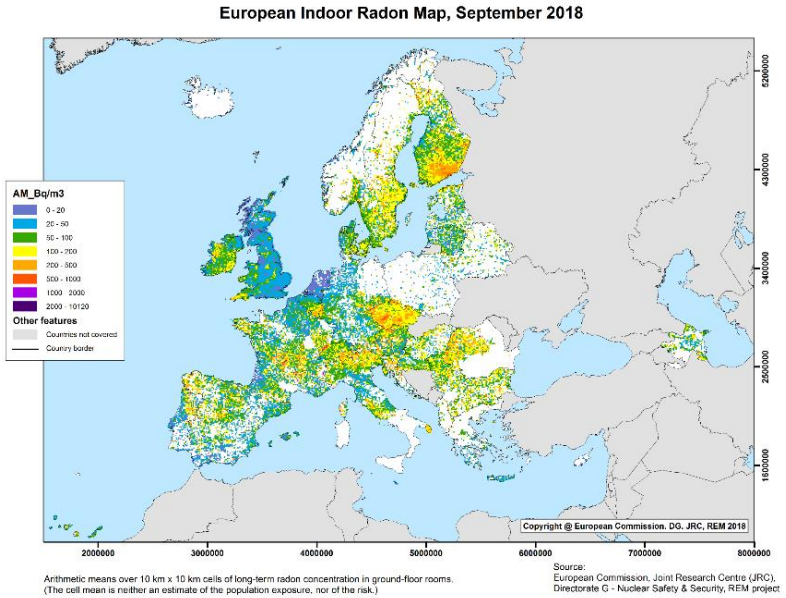
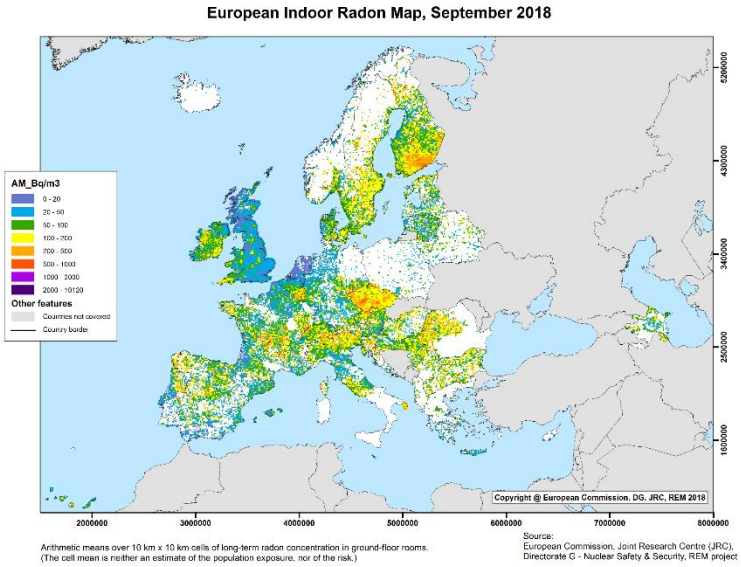


RICOMET 2019 conférence, 1- 3 July, Barcelona

This project has received funding from the Euratom research and training programme 2014-2018 under grant agreement No 662287.

Challenge: Cancer



- Exposure to indoor radon, is one of the **main causes of lung cancer** worldwide. (WHO, 2009)
- Although radon tests are accessible in most countries, and protective actions are effective and relatively easy to apply, the **levels of radon testing and subsequent home remediation remain lower** than aimed for.
- Radon risk remediation is not only a scientific or technical problem, but also a socio-political and psychological one, indicating a **'value-action gap'.**

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Challenge: Health communication to save peoples' life

- Effective radon risk communication has to **trigger behavior change**

Radon is a health hazard with a simple solution.

Test. Fix. Save a Life.

RQ:

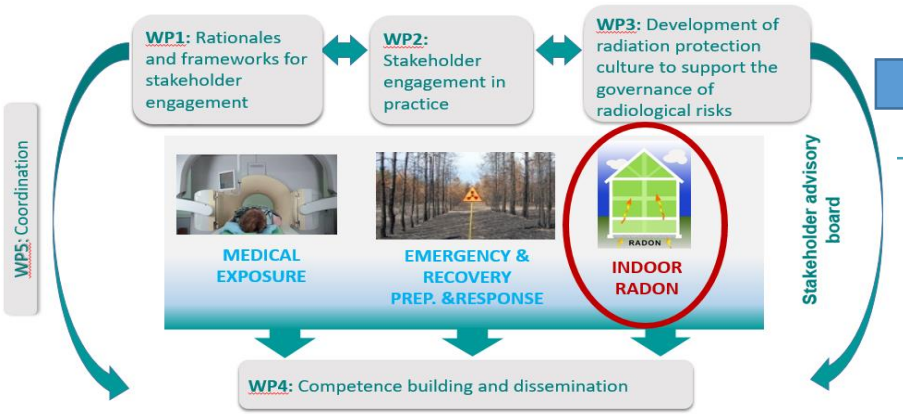
WHY IS RADON COMMUNICATION NOT EFFECTIVE?

Systematic SSH research about radon communication is needed!

Conclusions of this presentation are based on an expert opinion and experiences.

CONCERT — ENhancinG stAkeholder participation ENGAGE in the GovernancE of radiological risks

Enhancing stakeholder participation in the governance of radiological risks for improved radiation protection and informed decision-making



November 2017 - November 2019

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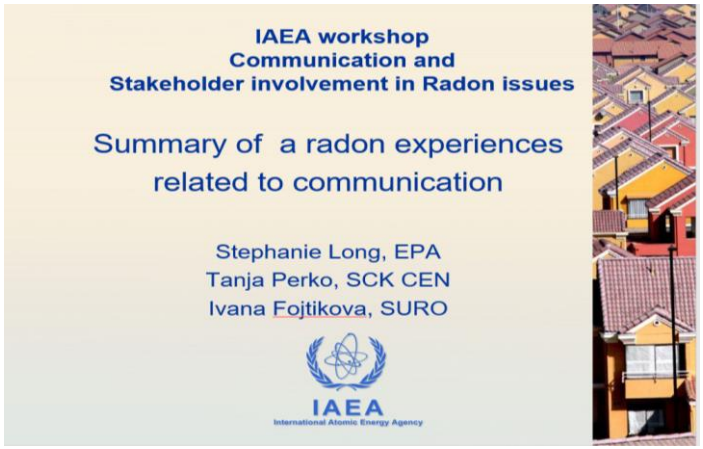
Data

- Document analysis
- Literature review
- Interviews
- Case studies
- Workshops

SCK·CEN · Bundesamt für Strahlenschutz · CEPN · vüje · Institut "Jožef Stefan" Ljubljana, Slovenija · LIÈGE université · ISGlobal Barcelona Institute for Global Health · Schweizerische Eidgenossenschaft / Confédération suisse / Confederazione Svizzera / Confederaziun svizra / Swiss Confederation · Federal Department of Home Affairs DHA / Federal Office of Public Health FOPH · IFIN-HH · IRSN · UNIVERSITÀ DEGLI STUDI DI MILANO · UFC UNIVERSITÉ DE FRANCHE-COMTÉ · ELEKTROINŠTITUT MILAN VIDMAR · EEAE ΕΛΛΗΝΙΚΗ ΕΠΙΤΡΟΠΗ ΑΤΟΜΙΚΗΣ ΕΝΕΡΓΕΙΑΣ GREEK ATOMIC ENERGY COMMISSION



- Radon experiences (practice) related to communication

- Systematic review: radon related internet pages of national and local authorities

Theoretical background
Models

Only 1 person in 5 is prepared to take health-related actions at any given time.
(J.Prochaska, Butterworth, Redding, Burden, & Perrin, 2008; J. O. Prochaska, DiClemente, & Norcross, 1992)

How to achive behavior change in the target audience

and ultimately improve public health?

?

Theory of Planned Behaviour (Ajzen, 1985), the Health Belief Model (Janz & Becker, 1984), the Protection-Motivation Model (Rogers, 1975), and the Transtheoretical Model of Health Behavior Change (J.Prochaska et al., 2008) … define health behaviour determinants

Attitudes, subjective norms, descriptive norms, moral norms, self-efficacy, risk-perception, protective efficiency of an action, threat, perception of resources needed, among others.

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Theoretical background
To effectively change behaviour you need

- Recognition that behaviour change is needed/desirable
- Motivation to make change
- Belief that change can occur and be maintained
- Triggers/cues to initiate change
- Perceived benefits of that change

Simply asking or telling people to change will not be very helpful, and is usually pretty useless.

The assumption that …. "*once you tell people that there is a threat, they will be motivated to test to see if they personally are at risk from the particular threat, and then they will act to remediate if the test indicates a threat, has proved* ***ineffective***" (Hevey, 2017).

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PRACTICE

in health communication about lung cancer due to Radon?

Check:

- legal requirements?
- economic constraints?
- Health Behaviour determinants addressed?
- radon risk perception?
- stakeholder engagement?
- is radon communicated through internet?

Photo provided to Canadian Lung Association by Take Action on Radon in partnership with Health Canada

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BSS: A (legal) requirement for communication and engagement

EU, *COUNCIL DIRECTIVE 2013/59/EURATOM*

ISSN 1977-0677

Official Journal of the European Union

L 13

English edition — Legislation — Volume 57, 17 January 2014

Contents

II *Non-legislative acts*

DIRECTIVES

★ Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom 1

*"**Strategy for communication** to increase public awareness and inform local decision makers, employers and employees of the risks of radon, including in relation to smoking".*

*„Member States shall provide as appropriate for the **involvement of stakeholders** in decisions regarding the development and implementation of strategies for managing exposure situations "*

In line with: The World Health Organization (WHO, 2009) & revised General Safety Requirements of the International Atomic Energy Agency (IAEA, 2014)

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Difficult to find legal background information


1966 Bundesgesetzblatt Jahrgang 2017 Teil I Nr. 42, ausgegeben zu Bonn am 3. Juli 2017

Gesetz zur Neuordnung des Rechts zum Schutz vor der schädlichen Wirkung ionisierender Strahlung*

Vom 27. Juni 2017

Der Bundestag hat mit Zustimmung des Bundesrates das folgende Gesetz beschlossen:

Inhaltsübersicht

Artikel 1 Gesetz zum Schutz vor der schädlichen Wirkung ionisierender Strahlung (Strahlenschutzgesetz – StrlSchG)
Artikel 2 Änderung des Atomgesetzes
Artikel 3 Änderung des Strahlenschutzvorsorgegesetzes
Artikel 4 Aufhebung des Atomgesetzes
Artikel 5 Änderung des Strahlenschutzvorsorgegesetzes
Artikel 6 Änderung über radioaktive oder mit ionisierenden Strahlen behandelte Arzneimittel
Artikel 7 Änderung des BVL-Gesetzes
Artikel 8 Änderung der Verordnung über radioaktive oder mit ionisierenden Strahlen behandelte Arzneimittel
Artikel 9 Änderung der Gebührenordnung für Ärzte
Artikel 10 Änderung der Approbationsordnung für Zahnärzte
Artikel 11 Änderung des Weingesetzes
Änderung des Lebensmittel- und Futtermittelgesetzbuchs
Änderung des Gesetzes über die Errichtung eines
Artikel 26 Änderung der Verordnung über die Sicherheit von Spielzeug
Artikel 29 Änderung des Vierten Buches Sozialgesetzbuch
Artikel 30 Änderung des Fünften Buches Sozialgesetzbuch
Artikel 31 Änderung des DVD-Gesetzes
Artikel 31a Evaluierung des Notfallmanagementsystems
Artikel 32 Inkrafttreten, Außerkrafttreten

Artikel 1

Gesetz zum Schutz vor der schädlichen Wirkung ionisierender Strahlung (Strahlenschutzgesetz – StrlSchG)

Inhaltsübersicht

Teil 1

Allgemeine Vorschriften

§ 1 Anwendungs- und Erfahrungsbereich

8 EU MS: Belgium, Croatia, France, Germany, Ireland, Italy, Slovenia and Spain

- National legislative documents found only on 13 www out of 173 www analyzed
- The new BBS Directive = 9 www
- National (draft) action radon plan = 6 (France, Ireland, Italy, Spain).
- Financial documents related to radon action plan = 5 www (France, Ireland, Slovenia and Spain) + incentives (Belgium)
- A radon mapping plan = 22 www
- Announcement where the radon mitigation activities are taking place: 18 www
- Tenders for labs for the radon analysis= 3 www (Fr, ES, Si)

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EUROPEAN JOINT PROGRAMME FOR THE INTEGRATION OF RADIATION PROTECTION RESEARCH
CONCERT

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Rn
radon

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Is cost a reason for not taking action?

e.g. : Ireland (EPA)

1400 invitations issued to randomly selected homes in parts of Co. Galway and Co. Roscommon

- Participants offered a free radon test and grant of 50% of the cost of remediation (max. 500 euro)
- **280** responses
- **9** homes had radon levels above 200Bq/m^3
- **3** homes using the remediation grant

Source: S. Long, EPA; IAEA radon workshop, 2019, Serbia

Cost (in Ireland) is not a reason for not taking action

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Is cost a reason for not taking action?

e. g. Sweden

Subsidies for home remediation are not fully used by stakeholders.

The Swedish National Board of Housing and Planning noted in 2004 that per year **only half of the radon subsidy budget to apply measures for reducing radon concentration in houses had been taken up by concerned homeowners.**

Source: Lofstedt, R., The communication of radon risk in Sweden. Journal of Risk Research, 2018.

Cost (in Sweden) is not a reason for not taking action

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Is cost a reason for not taking action?

- Cost of detectors: from free → to 50 euro

e.g. conclusion of IAEA workshop*:

- "For some countries detectors must be free

for others **a small fee means they are more likely to be returned**."

* Regional Workshop to Enhance the Competence of National Authorities in Implementing a Radon Communication Strategy through Practical Exercise, June, 2019, Serbia

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Determinants: subjective norms, descriptive norms, moral norms, self-efficacy, risk-perception, protective efficiency of an action, threat …

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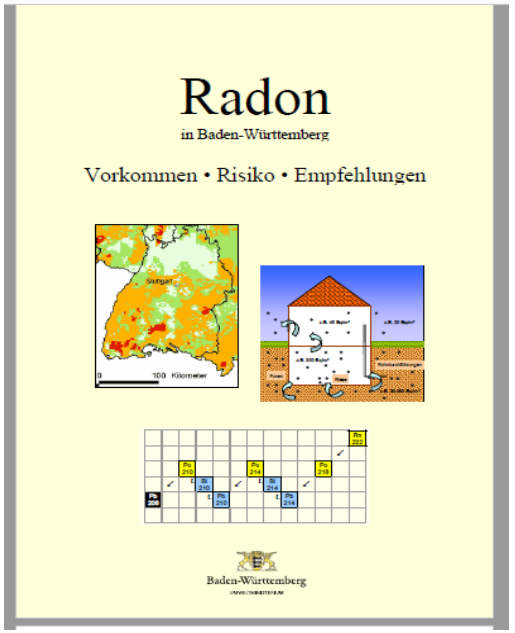
Different communication campaigns were conducted in last decade with a goal to increase the radon awareness and threat perception



The evaluation of radon campaign materials shows that such materials often promote perceptions of threat, but not perceptions of efficacy regarding recommended responses

Overlooked:

attitudes, subjective norms, descriptive norms, moral norms, self-efficacy, risk-perception, protective efficiency of an action, perception of resources needed …

Lack of targeted communication, e.g. for building sector

e.g. Ireland

Awareness of radon among the public after series of communication campaigns: 76% (2004), 77% (2010) and full awareness 86% (2013)

Despite increasing awareness, **concern** about radon in their home decreasing: 47% (2004), 43% (2010) & 33% (2013)

Even lower likelihood of having their home **tested:** 36% (2010)

EPA have shown that of those that test and find elevated radon concentrations, in their home only 1 /4 apply remediation actions

Source: Stephanie Long RPII EPA, IAEA workshop, Estonia, 2014

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Particular communication challenges for general public

How to …?

- explain what is a reference level?
- Explain what is 200 – 500 Bq/m^3
- explain the additional risks of radon?
- explain why to use a passive detector?
- make maps (which colors, what borders…)?
- explain in which indoor air quality measurements is radon included in which not
- get the message to homeowners without scaring them – create concern but not fear (which will close them down)…

- Before you do the measurements you must know in advance how you are going to communicate the results and protective actions.

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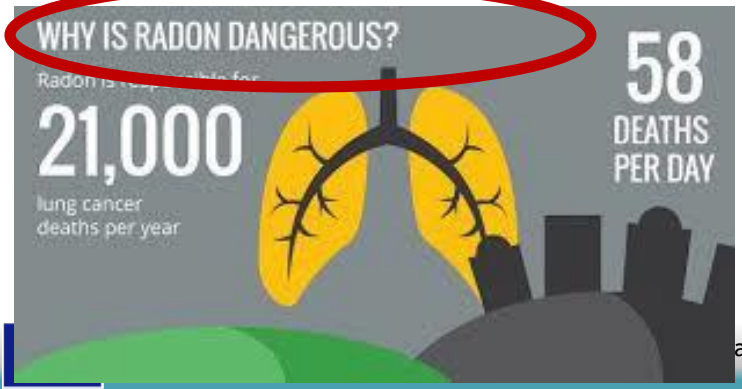
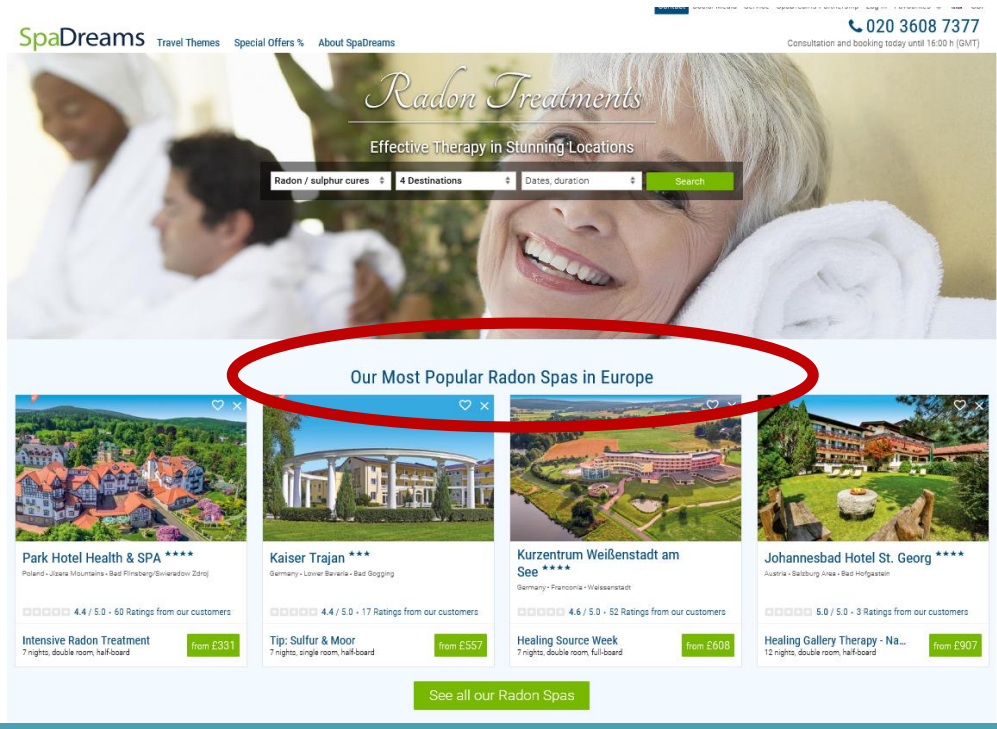
Rn radon

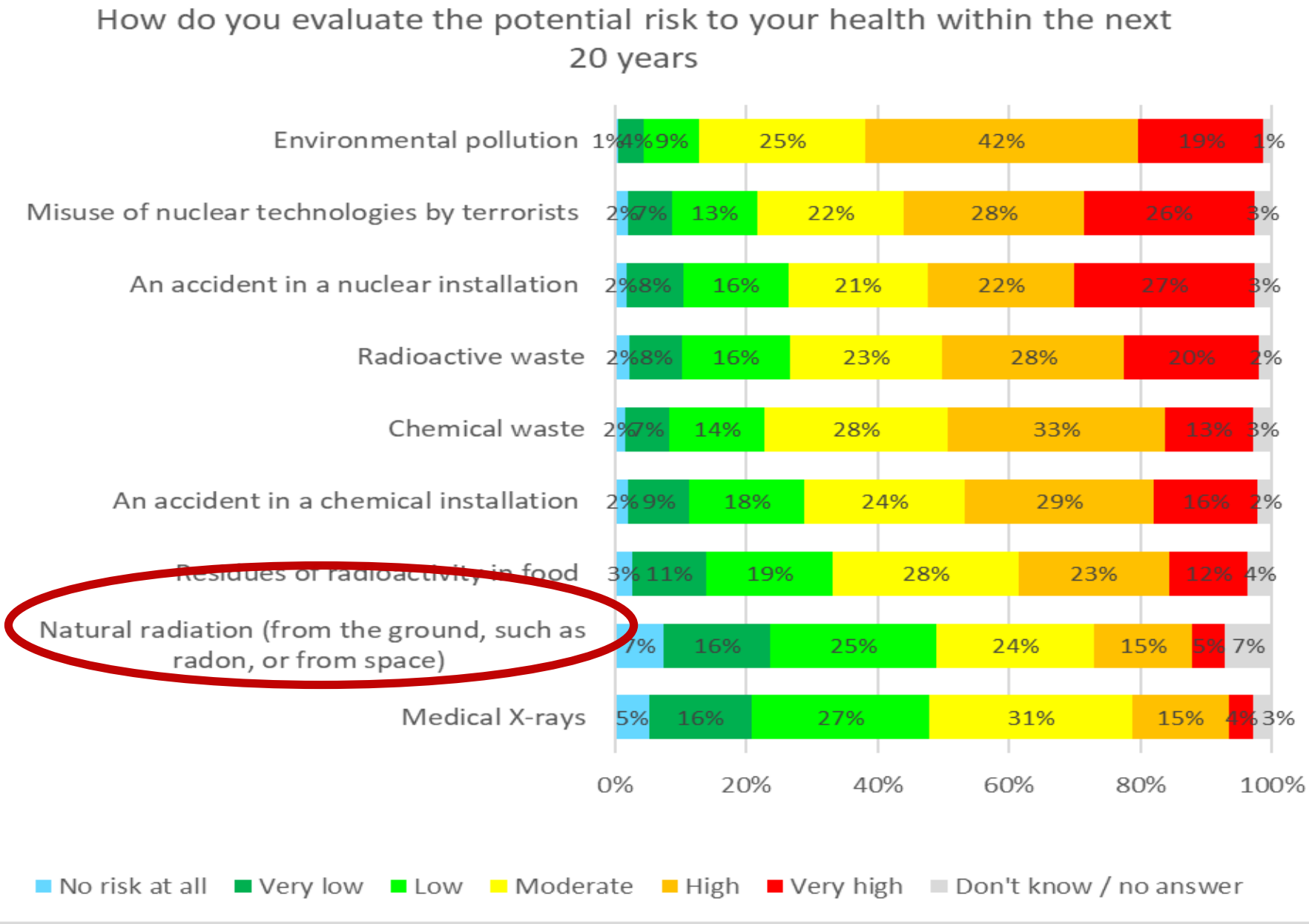
It is a naturally occurring radioactive, colorless, odorless, tasteless noble gas.

- "Naturally" occurring is more acceptable than man-made.
- Perception of personal risks is usually lower than perception of general risks.
- It doesn't have immediate consequences.
- It touches culture and way of life.
- It is unknown.
- It is not an immediate treat …
- It is a controversial issue





Source: SCK•CEN Barometer, Turcanu C. et al, 2017



Belgian population 18+; N=1083, sample weighed for education, gender and age; 2018

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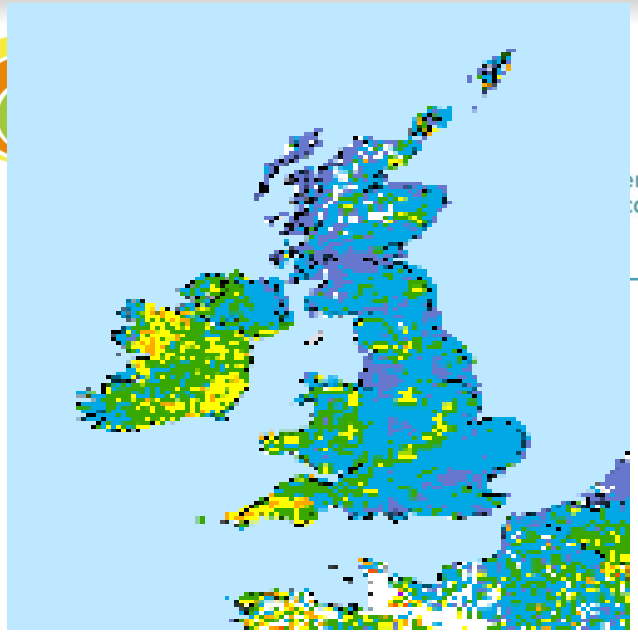

e.g. England and Wales

People living in high radon areas find the risks of radon gas acceptable, despite the higher perceived risks.

"Although they know that radon is bad for their health, they are not concerned about living in a house with high radon concentrations."

Poortinga, W., K. Bronstering, and S. Lannon, *Awareness and Perceptions of the Risks of Exposure to Indoor Radon: A Population-Based Approach to Evaluate a Radon Awareness and Testing Campaign in England and Wales.* Risk Analysis, 2011. **31**(11): p. 1800-1812.

Poortinga, W., P. Cox, and N.F. Pidgeon, *The Perceived Health Risks of Indoor Radon Gas and Overhead Powerlines: A Comparative Multilevel Approach.* Risk Analysis, 2008. **28**(1): p. 235-248.

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Findings from research and experiences from countries

Awareness about radon does not automatically lead to action!!!

ENGAGEMENT does

e.g. homeowners living in local communities actively engaged in a radon program had higher levels of awareness and are more likely to have their home tested for radon than homeowners living in communities that are not actively engaged in a radon program.

Similar results were found for homeowners living in areas of particular concern regarding radon risk, as compared to those living in less radon-affected areas.

Poortinga, W., K. Bronstering, and S. Lannon, *Awareness and Perceptions of the Risks of Exposure to Indoor Radon: A Population-Based Approach to Evaluate a Radon Awareness and Testing Campaign in England and Wales.* Risk Analysis, 2011. **31**(11): p. 1800-1812.

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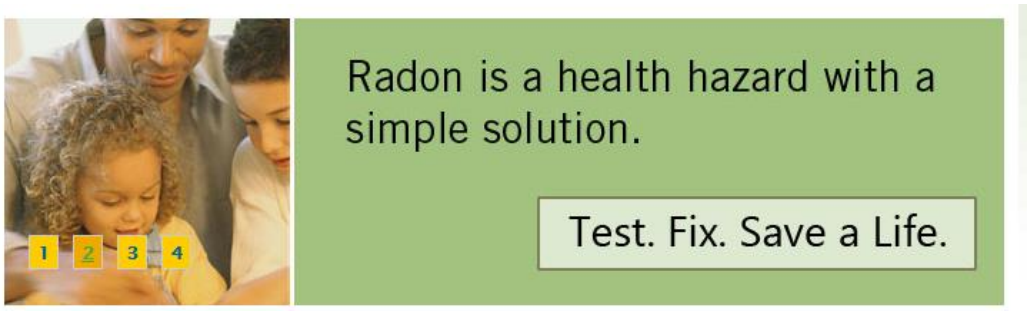
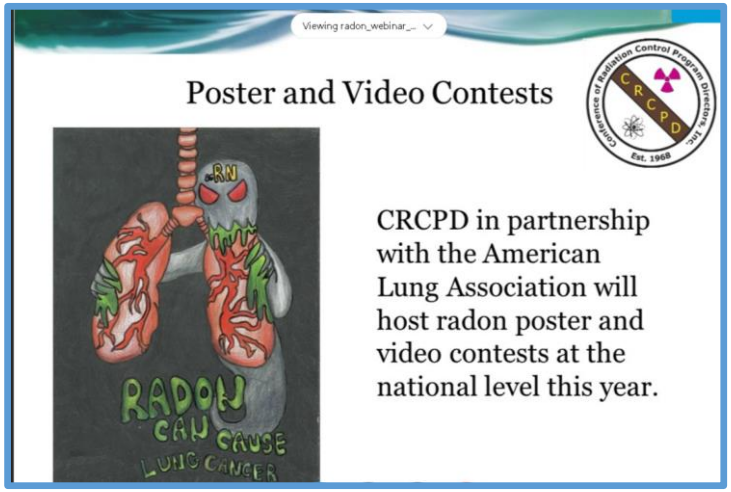
e.g. GB, USA,

Now, different participatory tools are used to engage with stakeholders, e.g. best radon video competition, visits of schools, best radon poster competition…





Golding, D., S. Krimsky, and A. Plough, *Evaluating Risk Communication - Narrative vs Technical Presentations of Information about Radon.* Risk Analysis, 1992. **12**(1): p. 27-35.

Guimond, R. and S. Page., *Indoor Radon: A Case Study in Risk Communication.* Radiation Protection Dosimetry, 1992. **42**: p. 169–176.

Hampson, S.E., et al., *Lay Understanding of Synergistic Risk: The Case of Radon and Cigarette Smoking.* Risk Analysis, 1998. **18**(3): p. 343-350.

Poortinga, W., K. Bronstering, and S. Lannon, Awareness and Perceptions of the Risks of Exposure to Indoor Radon: A Population-Based Approach to Evaluate a Radon Awareness and Testing Campaign in England and Wales. Risk Analysis, 2011. 31(11): p. 1800-1812.

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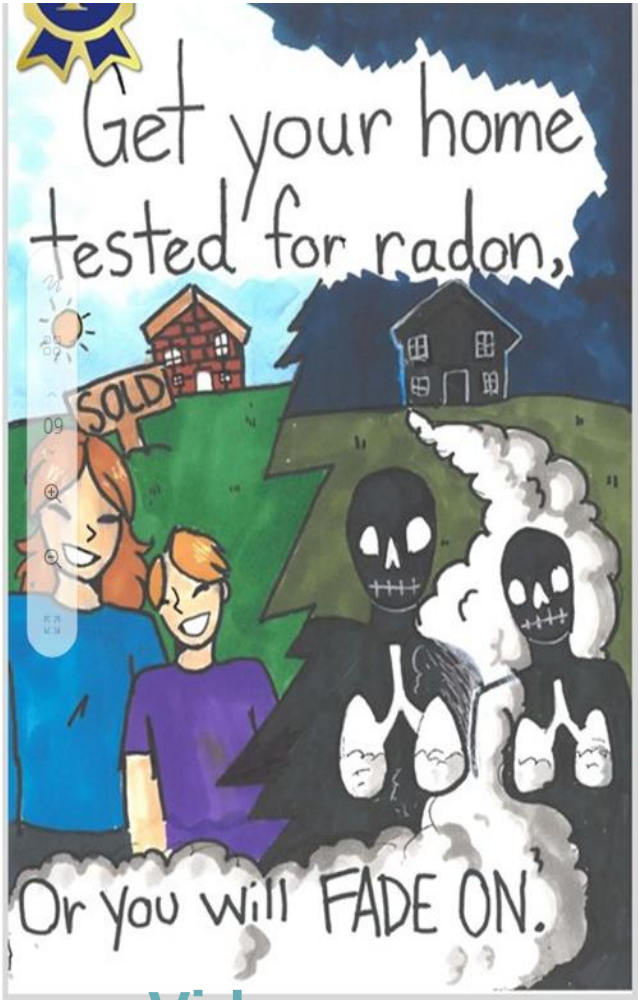
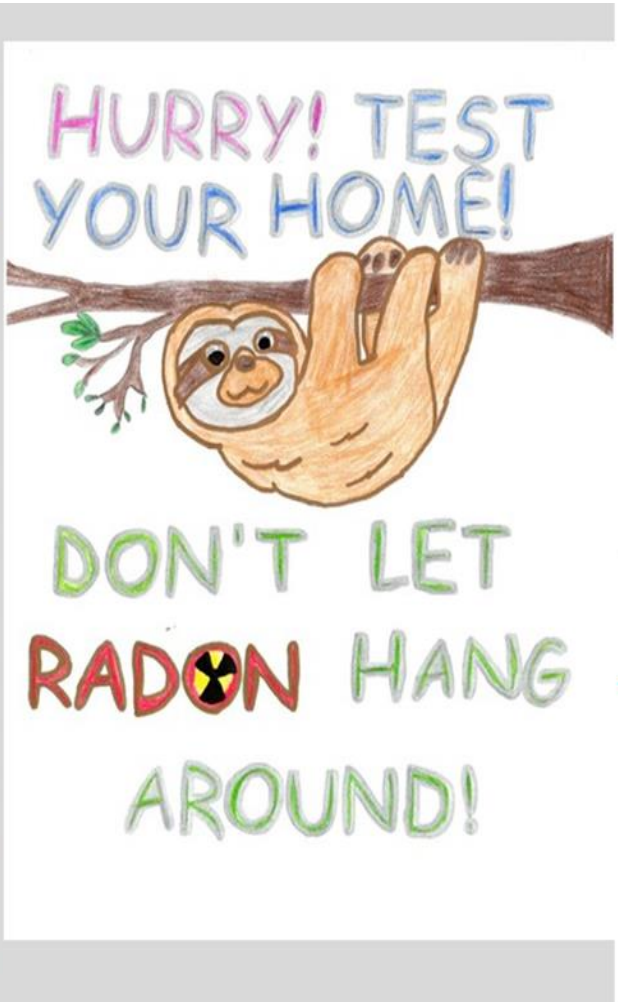
Poster: 2018 Illinois Winners
Successful campaign, however evaluation of behaviour change is missing





Video: https://www.lung.org/local-content/illinois/our-initiatives/illinois-radon-video-contest.htm

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From informing and educating to engagement with stakeholders

e.g.
In Croatia ministry engaged with schools (e.g. meetings at schools, special www for schools, measurements in schools…)

In Hungary national authorities engaged with residents and local doctors for radon mapping.

In Ireland: briefing national politicians that represent the target county; Public meetings (2 to 3 in main towns), chaired by local (sometimes national) politicians

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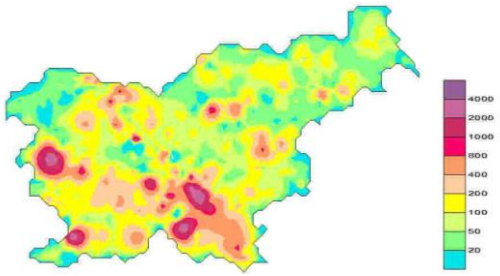
e.g. Slovenia

National authorities made official requests for **collaboration with local authorities in the radon action project**, in particular, *"by informing [..the] local population using internet pages and other communication channels, usually used [by their] local community."*



Skrk, D. and G. Omahen, *Meritve radona v bivalnih prostorih*, M.z.z. Zavod za varovanje zdravja, Editor. 2018, ZVZ: Ljubljana, Slovenia

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Challenges in stakeholder engagement (selected)

- Different organisations (authorities) have shared responsibilities
  - a memorandum of understanding can be useful to agree individual responsibilities (for some countries)
- Disconnection between risk assessment, risk mitigation and risk communication
  - Partnership approach with local and national authorities and employing professionals for risk communication may help
- Low interest and participation at stakeholders events
  - Trustworthy and well known promotor of the events, radon ambassador etc. may increase participation
- Collaboration between national and local levels

A detailed research:

Do radon websites of national and local authorities

EU wide support engagement of radon stakeholders?

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Method: Automated and Manual evaluation methods

- 173 internet pages of national, regional and local authorities from radon prone areas in 8 EU MS: Belgium, Croatia, France, Germany, Ireland, Italy, Slovenia and Spain
- Sampling: communities with exceeded levels of radon concentration
- The word “radon” was included as a browser criterion if the search engine existed on the evaluated page. Lastly, the search has been upgraded manually by looking at all pages, sub-pages related to health, environment, policies, news trying to identify topics related to radon on the evaluated internet page.
- Evaluation metrics by Coleman et al.(2008), Domarkas et al. and (2012), Siar (2005)
- Evaluation done by native speakers (English, Dutch, German, Italian, French and Slovene) or proficient in a language (Spanish, Croatian)

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Analysis
Evaluation metrics has been developed

- Availability of radon information;
- Accessibility;
- Stakeholder interaction;
- Dialogue
  - responsiveness,
  - content / design for stakeholders
  - stakeholders addressed,
- Transparency/openness

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Radon website analysis Results

- **Availability of radon information is limited**: only 57 % of authorities responsible for radon prone areas have radon information available on www
- **Accessibility challenges:** incomplete functionality, broken links and bad mobile responsiveness. Scattered personalized features
- **Stakeholders** engagement is possible on all issues, but not specifically to Radon: feedback forms and satisfaction questionnaires in general, few Q&A for radon, no Webinars, some direct personal communication, stakeholders mainly limited to residents
- **Lack of responsiveness**: Only few meaningful responses on our question
- **Dialogue:** Social media not employed – only few posts on Rn – those highly retweeted or followed
- **Content**: Radon information is mainly dispersed throughout www. Hard to find
- **Low transparency/openness**: action radon plan not often on-line, ongoing mitigation actions rarely published…

Radon information for householders

Buying or selling a house and need to know what to do next? This area covers radon and house sales, risks to your health and measuring radon

More information

Radon information for employers

Need to fulfil your health and safety requirement as an employer? Do you have a large property portfolio? Need to test your workplace? Find all this information and more here.

More information

Radon information for professionals

Are you a solicitor dealing with property transactions? A builder who needs building regulations guidance? A Social Landlord needing information to pass onto your tenants? Find all this and more here.

More information

Radon information for local authorities and Housing Associations

Need to know if any of the houses in your Local Authority are in a radon Affected Area? Do you need information to pass to your tenants? Are any of your offices in Affected Areas? Find all this information and more here.

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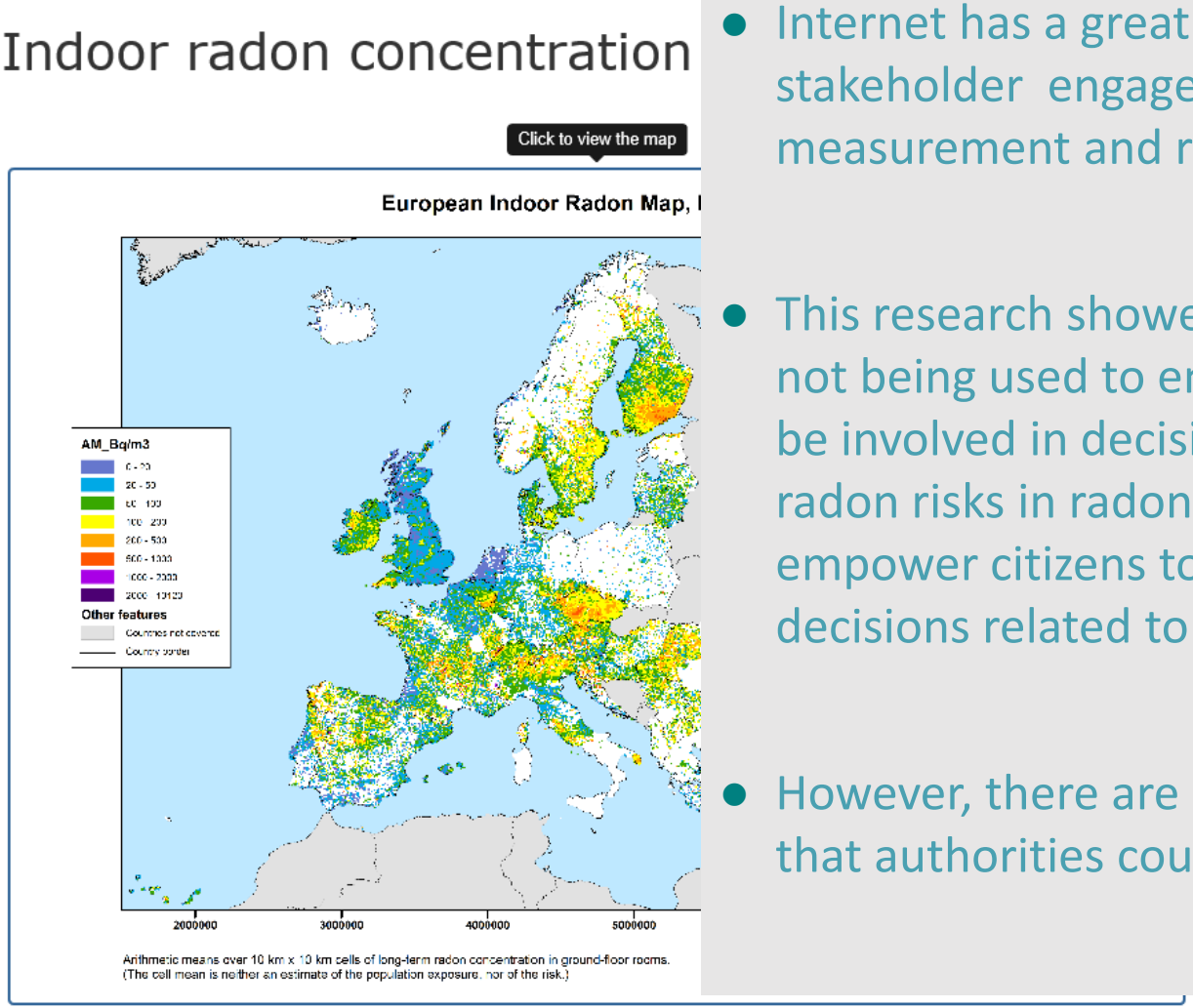
What we can learn from this study for better radon communication?



- Internet has a great potential to increase stakeholder engagement in radon measurement and remediation actions.
- This research showed that currently it is not being used to empower stakeholders to be involved in decision-making related to radon risks in radon prone areas or to empower citizens to make informed decisions related to radon risk reduction.
- However, there are some good practices that authorities could follow.

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Conclusions
Why is radon communication not effective?

- Legal requirements exist, however, they are limited to awareness and difficult to find.
- Cost is (in many countries) not a reason for not taking action.
- Radon communication should be based on scientific results (health behavioral models) and not on gut feelings.
- Radon communication needs to address other determinants than awareness!
- Effectiveness of communication campaigns needs to be measured by behavioral change!
- Need for for multi-disciplinary approach in radon risk communication!
- SSH research in radon is needed!

This project has received funding from the Euratom research and training programme 2014-2018 under grant agreement No 662287.

You are invited

ENGAGE final workshop

Second announcement

Enhancing stakeholder participation in the governance of radiological risks for improved radiation protection and informed decision making

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DATE & PLACE: 11-13 SEPTEMBER 2019, Bratislava, Slovak Republic

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Stakeholder engagement is recognized as essential in the governance of radiological risk. But **how is stakeholder engagement achieved? Whom does it include and why? How can it inform radiation protection practices and decision making?**

This workshop will tap into participants' expertise and experiences on these and related questions, with the aim of stimulating more effective and democratic governance of radiological risks. **Three fields will be examined in detail:** **medical exposures** to ionizing radiation, **post-accident** exposures, and exposure to **indoor radon**.

Workshop Aims:

- To share findings from the ENGAGE project and stimulate mutual learning;
- To co-develop recommendations for enhanced stakeholder participation in the aforementioned three fields.

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